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Cooperative
ECONOMIC INSECT REPORT

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ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 5 December 2, 1955 No. 48

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

SPOTTED ALFALFA APHID increasing in Salt River Valley of Arizona, damaging new alfalfa stands in Major County, Oklahoma, and continues active in areas of California and Kansas. (p. 1065).

Surveys show more BOLL WEEVIL in hibernation in South Carolina and Louisiana than in fall of 1954. (p. 1066).

Results of STALK BORER survey in Texas in 1955. (p. 1063).

SUMMARY OF INSECT CONDITIONS - 1955 - in Utah. (p. 1070).

SURVEY METHOD for predators on cotton. (p. 1077).

STATES reporting this week - 17.

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Reports in this issue are for the week ending November 25, 1955, unless otherwise designated.

WEATHER FOR THE WEEK ENDING NOVEMBER 28, 1955

In the Pacific Northwest the severe cold weather moderated considerably last week, temperatures remained above the zero mark, and weekly averages were 15° to 20° higher than those for the previous week. Between the Continental Divide and Great Lakes, however, the weather was cold and windy with temperatures dropping below zero on 4 or 5 nights, and averaging 17° below normal for the week at Great Falls, Montana, and Bismarck, North Dakota. The lowest temperatures occurred during the week end as a cold wave swept down over the Central Interior to the Gulf of Mexico. On the morning of the 29th cold air covered the entire area east of the Divide, except extreme southern Florida, and freezing extended to some sections of the Gulf Coast - Lake Charles, Louisiana, 30°; Mobile, Alabama, 26°; Pensacola and Appalachicola, Florida, 28° and 31° respectively.

Temperatures were unseasonably high in the southern and central areas early in the week as Fort Worth, Texas, recorded 89° and Kansas City, Missouri, 71° on the 22d, and they continued on the mild side until reduced by the weekend cold wave. From eastern Arizona to the Atlantic Coast temperatures for the week averaged 1° or 2° above normal.

The week's precipitation was moderate to heavy in the Pacific Northwest and in a large area of the South. In central and northern portions of Mississippi and Alabama these rains replenished soil moisture which had been depleted by warm, dry weather in September and early October. In the remainder of the Country precipitation was very light except in a few widely scattered localities.

In Iowa, Missouri, and the central Great Plains soil moisture is short as a result of 6 weeks or more of dry weather. In the latter areas the soil is becoming dry and loose and strong winds last week caused some light to moderate duststorms.

Higher temperatures melted the snow cover at lower levels in the Far West except in regions near the Canadian Border. The cover ranges from 3 up to 10 inches in eastern Washington and from 60 to 80 inches in the Cascades where much new snow fell last week. The snow cover also extends over most of Montana, the Dakotas, Minnesota, and the Great Lakes Region. Depths exceed 6 inches in the northeastern quarter of North Dakota and northern portions of Minnesota and Wisconsin, and range up to 17 inches at International Falls, Minnesota, and 11 inches at Duluth, Minnesota and Bismarck, North Dakota. A trace covers the ground in parts of Indiana, Ohio, and western Pennsylvania.

(Summary Supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

EUROPEAN CORN BORER (Pyrausta nubilalis) - VIRGINIA - Survey showed the average larval population per 100 stalks as follows: 108 in 10 southwestern counties and 204 in 10 northern counties. (Morris).

Stalk Borer Surveys in Texas in 1955

Surveys were made in the northeast and coastal areas of the State from August 22 through September 16 to determine the areas infested with stalk borers and the intensity of infestations. The southwestern corn borer (Diatraea grandiosella) is the dominant species in the northeastern areas, while sugarcane borer (Diatraea saccharalis) is the chief species in the coastal areas. Cornstalk borers were found in 31 of 45 northeast counties. Infestations averaged from 0 to 48 percent by county. Only southwestern corn borer (Diatraea grandiosella) was found in this area. The infestations in general were lighter this year than last. Seven additional counties were found infested: Clay, Harrison, Johnson, Kaufman, Montague, Panola and Rusk. Twenty-seven counties were surveyed for sugarcane borer from August 29 to September 9. The borer was found in either corn or sorghum, or both, in 22 counties. Infestation average in corn ran from 0 to 98.6 percent and 0 to 100 percent in sorghum. Sugarcane and rice fields were inspected in counties where they were grown. Light infestations of sugarcane borers in rice were found in Brazoria, Jackson, Victoria, Waller, Wharton and Matagorda Counties. The heaviest infestations were in Matagorda, Brazoria and Jackson Counties, where a few fields had up to 24 percent of the rice stems infested. Sugarcane was found lightly infested in Brazoria, Jasper and Polk Counties, with very heavy infestations in Newton County. (Davis).

CHINCH BUG (Blissus leucopterus) - NEBRASKA - Examination of one-third of samples collected revealed a light to moderate infestation in southeastern area. Counts from 8 to 555 per square foot. (Andersen).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - KANSAS - Light infestation in corn field in northern Wabaunsee County. About two percent of stalks girdled and living larvae found in lower part of girdled stalks. (Matthew).

CORN LEAF APHID (Rhopalosiphum maidis) - OKLAHOMA - Reported in two fields in Canadian and Garvin Counties, 25 per linear foot of row, and from Alfalfa and Woods Counties at an average of 20 per linear foot of row. Averaged 38 per linear foot of row on winter barley in Garfield County. (Coppock).

GREENBUG (Toxoptera graminum) - KANSAS - No infestation found in fields examined in Riley, Wabaunsee, Shawnee, Douglas and Jefferson Counties. (Matthew).

SORGHUM MIDGE - SOUTH CAROLINA - Reported damaging grain sorghum in Lancaster County. (Cannon).

SPOTTED ALFALFA APHID - CALIFORNIA - Light to medium in all alfalfa-growing areas in Tehama County. Infestations general over Kings County, where 3123 acres were treated. Moderate damage in Madera County and light to heavy infestations in part of San Bernardino County. (Cal. Coop. Rept.). ARIZONA - In 10 alfalfa fields used for periodic survey in Maricopa County, average population per leaflet November 17-18 was 4.06 compared with 3.36 November 7, 2.74 October 26-27, and 1.50 October 20. A steady increase in populations in Salt River Valley, reaching 12-23 per leaflet November 18. Most heavily infested fields show 25-70 percent damage, despite drastic population reduction by predators, diseases, hay-cutting and insecticides. Adults and larvae of lacewings and syrphid flies more numerous during fall than in spring and summer, although lady beetles not general in Salt River Valley during the fall. (Ariz. Coop. Rept.). OKLAHOMA - Severe damage to newly-planted alfalfa in Major County, with counts in 3 fields averaging 4000 per linear foot of row. Averages of 400-500 per linear foot of row in Kingfisher County. Counts in old alfalfa averaged 2500 per square foot in four fields in Major County and 400 per square foot in three fields in Kingfisher County. Only small numbers in Payne, Logan and eastern Kingfisher County. (Coppock). KANSAS - Infestations from 15-200 per 20 sweeps in alfalfa in Riley, Wabaunsee, Douglas and Jefferson Counties. (Matthew).

YELLOW CLOVER APHID - NEBRASKA - Infestation on red clover still exists south of Columbus. (Andersen). KANSAS - Averaged seven per infested plant in red clover fields of Jefferson County. (Matthew).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - TEXAS - Heavy, widespread infestations on winter peas interplanted with rye and in peanuts in Mason County. (Fuller).

LEAFHOPPERS - OKLAHOMA - Killing small portions of newly-seeded alfalfa in Logan and Kingfisher Counties. (Henderson).

FRUIT INSECTS

FLORIDA RED SCALE (*Chrysomphalus aonidium*) - FLORIDA - Correction: CEIR 5(46):1033 - California Red Scale should read Florida Red Scale. (Pratt).

HICKORY SHUCKWORM (*Laspeyresia caryana*) - NORTH CAROLINA - Causing serious losses to pecans in Alamance County. (Bacon, Jones).

TRUCK CROP INSECTS

EUROPEAN CORN BORER (*Pyrausta nubilalis*) - PENNSYLVANIA - Infested 10 percent of pepper fruits in a 3/4-acre plot in Blair County, October 29. (Udine).

SWEETPOTATO WEEVIL (*Cylas formicarius elegantulus*) - TEXAS - Heavy populations in wild morningglory plants over Houston County. (Nix).

COTTON INSECTS

Pink Bollworm Situation, November 1-15

Gin trash inspections continue to give negative results outside known infested areas. Final inspections for season made in Mississippi, Louisiana, Oklahoma and Missouri. In 31 counties of eastern half of Oklahoma, where season's regular gin trash inspections completed, tabulations show three counties with no infestations, one county with decrease and 27 counties with increases compared with 1954. The 31 counties showed bollworms at the rate of 2.89 per bushel of trash compared with .18 for 1954. Definite increases in Coleman, McCulloch and Tom Green Counties, Texas. In Luna County, New Mexico, bollworms found at rate of .15 per bushel of trash compared with 1.84 in 1954. In northern Chihuahua, Mexico, counts per bushel of trash showed reductions over 1954. In Oklahoma, southwest counties, 60 bollworms were found per lint cleaner inspection compared with an average of five in 1954. Average number per lint cleaner in El Paso County, Texas, was 188 compared with 11.5 for 1954. Counts in Dona Ana County, New Mexico, averaged nine per inspection compared with 4.3 in 1954. (Pink Bollworm Cont. Prog.).

Boll Weevil Hibernation Survey - Fall 1955

LOUISIANA - Survey for hibernating boll weevils in woods trash was started November 7 and completed November 21. An average of 13,443 live weevils per acre was found in the 200 samples* collected near Tallulah in Madison Parish. This was 5.7 times the average number recorded during the past 19 years, 2.6 times the number found during the fall of 1953, which was the single year in which the greatest number was found during the 19-year period, and 5.0 times the number found during the fall of 1954. The number per point (10 samples) ranged from 726 to 51,062. An average of 3,742 live weevils per acre was found in 130 samples collected in 8 additional parishes: St. Landry, Avoyelles, Rapides, Natchitoches, Red River, Bossier, Ouachita, Tensas. In the 5 parishes where collections were made in 1954 an average of 1.8 times as many weevils was recorded in 1955 as in 1954. For all 330 samples collected in Louisiana an average of 9,621 live weevils per acre was obtained. (Gaines, Newsom, et al).

SOUTH CAROLINA - During the second week of November, 200 square yards of surface woods trash were examined from 20 farms in Florence County. Live boll weevils were found at various rates per farm ranging from 484 to 35,332 per acre with average of 11,398 per acre. This average is the greatest number found during the 13-year period that such examinations have been made. It is 4.9 times the average for the fall of 1954 and 2.3 times the average for the 13-year period. Between November 10 and 28, 300 square yards of surface trash were examined from 5 farms in each of 6 counties: Darlington, Sumter, Clarendon, Laurens, Horry and Orangeburg. Average for all samples taken in these counties in 1955 was 8,260 weevils per acre against 1,499 per acre in 1954, or 5.5 times as many in fall of 1955 as in fall of 1954. (Walker et al).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

MEALYBUGS - OKLAHOMA - Medium infestations on dracaena plants in greenhouses, November 18. (Bower).

A CERAMBYCID (Oberea myops) - VIRGINIA - Correction: 5(46): 1036-"Damaging rhododendron and azaleas at one locality on Eastern Shore" should read "Damaging * * * * one locality in Fauquier County. (Morris).

BEAN LEAF ROLLER (Urbanus proteus) - FLORIDA - Correction: CEIR 5(47):1053, Urbania proteus should read Urbanus proteus. (Denmark).

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*Each sample is two square yards.

INSECTS AFFECTING MAN AND ANIMALS

CATTLE GRUBS - OKLAHOMA - At Oklahoma City, of 80 cows originating from Muleshoe, Texas, 15 had no grubs, 42 had 1-20, 16 had 20-50, and 7 had 50 or more. Of 31 two-year-old heifers from Osage County, Oklahoma, 10 had no grubs, 13 had 1-20, 7 had 20-50, and one had 50 or more. Of 76 three-year-old steers from Hamilton, Kansas and Pawhuska, Oklahoma, 11 had no grubs, 43 had 1-20, 12 had 20-50. At Enid, Oklahoma, of 18 two-year-old heifers from a 75-mile radius, 3 had no grubs, 7 had 1-20, 7 had 20-50, and one had 50 or more. (Coppock, Nov. 18). Averaged 20-30 per animal in western Payne County, eastern Canadian County and Logan County, November 25. (Howell).

WINTER TICK (Dermacentor albipictus) - PENNSYLVANIA - Collected on cattle in Tioga County. (Gesell).

BROWN DOG TICK (Rhipicephalus sanguineus) - NORTH CAROLINA - Heavy infestation in a home in Wake County. (Farrier).

STORED PRODUCTS INSECTS

Stored Grain Insect Situation, Oklahoma

Survey of six seed warehouses in Alfalfa, Woods, Grant, Kay and Noble Counties showed four premises infested with one or more species. Infestations of BLACK CARPET BEETLE in three locations; INDIAN-MEAL MOTH in two locations; CONFUSED FLOUR BEETLE, CADELLE, and COWPEA WEEVIL each from one location. No KHAPRA BEETLE found, November 18. A survey of 17 bins in Major and northern Blaine Counties showed six bins with one or more species of insects. Grading screens used to screen a one-quart sample. Three of five bins of wheat yielded one CADELLE, 54 BLACK CARPET BEETLE larvae and 11 LESSER GRAIN BORERS. One of three barley bins yielded two CADELLES. One of the two milo bins yielded four CONFUSED FLOUR BEETLES, six LESSER GRAIN BEETLES, five BLACK CARPET BEETLE adults, 78 BLACK CARPET BEETLE larvae. One bin of oats and wheat mixture yielded 26 GRANARY WEEVILS, 8 BLACK CARPET BEETLE larvae, November 25. (Coppock).

GRAIN MITE (Acarus siro) - OREGON - Large numbers in stored wheat at Prineville, November 3. (Det. G. Krantz). (Goeden).

A MITE (Histiogaster carpio) - OREGON - In tapioca starch at a paper mill in Oregon City, October 26. (Det. H. H. S. Nesbitt). (Garoian).

LIGHT TRAP COLLECTIONS

		Pseudal. unipun.	Laphyg. frugip.	Agrotis ypsilon	Feltia spp.	Heliothis zea *	Agrotis glad.	Choriz. aux.	Antic. gemma.
KANSAS									
Manhattan	11/19-24	1		1				2	
TEXAS									
College Sta.	11/19-23	220	54	6	139	1	600		
Weslaco	11/1-15	745	61	112	229	25			
LOUISIANA									
Tallulah (3 Traps)	11/19-25	103	12	76	39	20	215		4
ALABAMA									
Auburn	11/19-25				5				
SOUTH CAROLINA (Counties)									
Oconee	11/20-26			1	1				
Charleston	11/22-28	11		19	23	1			5

*Reported as H. armigera previously. Ref. Todd, E. L. 1955. The distribution and nomenclature of the corn earworm. Jour. Econ. Ent. 48 (5):600, 602-603.

MISCELLANEOUS INSECTS

COCKROACHES - TEXAS - Medium to heavy infestation of Blatella germanica in many homes in Menard County. Apparently resistant to chlordane. (Mullins). VIRGINIA - Heavy infestation in a home in Loudoun County. (Rowell).

GIANT HORNET (Vespa crabro germana) - VIRGINIA - Nesting under eaves, siding and in woods of Blacksburg and annoying families in area. Also stripping bark from lilacs. (Rowell).

POWDER-POST BEETLES - VIRGINIA - Have heavily damaged poplar timbers in a residence at West Point. (Rowell).

SUMMARY OF INSECT CONDITIONS - 1955

UTAH

Reported by G. F. Knowlton, H. E. Dorst, D. W. Davis, H. F. Thornley, F. V. Lieberman, D. R. Parker, G. H. Kaloostian, F. C. Harmston, L. E. Fronk, and County Agricultural Agents.

Cereal and Forage Insects

GRASSHOPPERS caused approximately $669,000 in crop and range damage. Control was applied to approximately 81,000 acres, which protected vegetation on at least 326,000 acres of crop and range lands. This saved an estimated $690,000. Aircraft sprayed 66,404 acres; the balance was sprayed by ground equipment. In several areas, spring storms and cold markedly reduced anticipated grasshopper outbreaks. The more injurious species were *Melanoplus mexicanus*, *Camnula pellucida*, *M. bivittatus*, *Aulocara elliotti*, *M. femur-rubrum* and *M. packardii*. MORMON CRICKETS (*Anabrus simplex*) were baited over 4,358 acres by aircraft in time to minimize range losses. An additional 10,814 acres were baited by ground equipment. SPOTTED ALFALFA APHID infested 21 of Utah's 29 counties during the year. It caused an estimated hay and alfalfa seed loss exceeding $500,000. PEA APHID (*Macrosiphum pisi*) damaged canning peas in northern Utah and injured alfalfa in scattered areas. LYGUS BUGS (largely *Lygus elisus*, *L. hesperus* and *L. desertus*) were abundant and commonly injurious to the alfalfa seed crop wherever control was delayed or omitted. Other forage crops and weeds were conspicuously infested throughout the season.

A PLANT BUG (*Adelphocoris superbus*) caused some injury to buds on alfalfa seed crops. SWEETCLOVER WEEVIL (*Sitona cylindricollis*) spread to several additional counties. ALFALFA WEEVIL (*Hypera postica*) was damaging where early spring control was omitted. An estimated 30 percent of all alfalfa grown in Utah received early-spring stubble spray, in spite of rains. ALFALFA CATERPILLAR (*Colias philodice eurytheme*) damaged more than 1000 acres of second crop alfalfa in Millard County; generally moderate elsewhere. A LEAF TIER (*Amelia pallorana*) caused only light injury. ARMY CUTWORM (*Chorizagrotis auxiliaris*) caused spotted injury to alfalfa, small grains and range in many counties. WESTERN YELLOW-STRIPED ARMYWORM (*Prodenia praefica*) damaged alfalfa and sometimes truck crops in Cache, Morgan, Weber, Summit and Wasatch Counties; damage by *P. ornithogalli* was local in southern Utah. BROWN WHEAT MITE (*Petrobia latens*) caused losses of two to three bushels per acre on about 5000 acres of wheat and barley. However, in general, timely rains kept populations low. Fall populations were high (50 to 100 per linear foot of drill row) on about 3000 acres. CORN LEAF APHID (*Rhopalosiphum maidis*) damaged thousands of acres of spring barley in twelve counties, and corn and irrigated wheat to a lesser extent. In some areas ENGLISH GRAIN APHID (*Macrosiphum granarium*) injured wheat. MIRIDS (largely *Stenotus binotatus*) caused damage to grasses in several areas. STINK BUGS (*Chlorochroa sayi* and others) caused only light damage to small grains and alfalfa seed. Local injury to corn from sap beetles, to alfalfa and wheat from leafhoppers, to alfalfa from treehoppers, western harvester ant, and miscellaneous mites. CLOVER SEED CHALCID (*Bruchophagus gibbus*) caused economic damage quite generally in seed-producing areas.

Fruit Insects

APHID infestations generally were below normal during the season. However, the BLACK CHERRY APHID (*Myzus cerasi*) caused conspicuous damage commonly. WOOLLY APPLE APHID (*Eriosoma lanigerum*) was a problem in many apple orchards. CODLING MOTH (*Carpocapsa pomonella*) infestations varied from low to more than fifty percent injured apples and pears. FRUIT TREE LEAFROLLER injury was moderate. A LEAFHOPPER (*Colladonus geminatus*) was scarce in alfalfa fields. SAN JOSE SCALE (*Aspidiotus perniciosus*) found in many small orchards. CLOVER MITE (*Bryobia praetiosa*) was most common and damaging mite, with spotted injury from EUROPEAN RED MITE (*Metatetranychus ulmi*) and moderate late season damage from TWO SPOTTED SPIDER MITE (*Tetranychus telarius*, *T. mcdanieli*, and, at Moab, *T. canadensis* on apple and peach. *T. canadensis* was recorded in Utah for first time in 1955. (Det. E. W. Baker). A CHERRY RUST MITE (*Vasates fockeui*) and PEACH SILVER MITE (*Vasates cornutus*) also infested orchards in several counties. PEAR-SLUG (*Caliroa cerasi*) caused moderately severe damage to cherries and some injury to pear, plum and hawthorn foliage. The CALIFORNIA PRIONUS (*Prionus californicus*) killed 12 apple trees and 36 apricot trees in a large orchard at Holladay. CAT-FACING INSECTS caused slightly less damage to peaches, pears and apples than during 1954. PEACH TREE BORER (*Sanninoidea exitiosa*) damage was general and often serious in stone fruit orchards throughout the State. PEACH TWIG BORER (*Anarsia lineatella*) caused moderate to light injury to apricots, peaches, and sometimes to plums. PEAR THRIPS (*Taeniothrips inconsequens*) were moderately numerous in spring. CHERRY FRUITWORM (*Grapholitha packardi*) infested cherries in a few Utah and Cache County orchards. SHOT HOLE BORERS damaged cherry, peach and apricot trees in some old, neglected or weakened orchards. What appeared to be WALNUT HUSK FLY severely damaged English and black walnuts at Ogden. WESTERN GRAPE LEAF SKELETONIZER (*Harrisina brillians*) was almost completely controlled by parasites. GRAPE BERRY MOTH (*Polychrosis viteana*) larval damage was about fifty percent of 1954, in Washington County. CURRANT APHID (*Capitophorus ribis*) commonly attacked and distorted leaves of red currant. Injury from other berry-crop aphids generally was moderate. CURRANT FRUIT FLY damage was normal. STRAWBERRY LEAFROLLER injury occasionally was conspicuous. SNOWY TREE CRICKET injury fairly common, and the STRAWBERRY CROWN MOTH (*Ramosia bibionipennis*) infested strawberry plants at Provo. ROOT WEEVILS (*Brachyrhinus ovatus*, *B. rugosostriatus*, and sometimes *B. sulcatus*) caused damage to many strawberry patches, with occasional injury to raspberries.

Truck Crop Insects

TOMATO FRUITWORM (*Heliothis zea* (Boddie))* surveys showed egg population on tomato leaves averaged 0. 5 per hundred leaves in late June and early July. The count decreased with egg deposition on early corn very low. At main fruit set on tomatoes in early August, egg population had decreased from 0. 07 to 0. 01 eggs per hundred leaves; consequently, no insecticides were applied to canning corn or tomatoes, saving growers about $80, 000, which is normally expended for control of this insect on these two crops. Infestation on early market sweet corn in northern Utah in July averaged less than three percent. In canning corn in August and September, infestation increased slightly but generally averaged less than ten percent. Infestation on market corn in southern Utah was 50-100 percent. TOMATO RUSSET MITE (*Vasates lycopersici*) infestations were light, in three tomato fields in northern Utah. BEET LEAFHOPPER (*Circulifer tenellus*) in the eight local breeding grounds of northern and eastern Utah had a low overwintering population, except the Rozel, Tooele Valley, Skull Valley and West Mountain areas, which averaged 0. 02, 0. 013, 0. 018 and 0. 013 leafhoppers, respectively. Light-form migrants or long distance migrants and nymphs were observed in the local breeding grounds of northern Utah in early May. Leafhopper population on susceptible crops was moderate to heavy in southern and central areas and light to moderate in northern area. Light populations are 0. 3 to 0. 5 per square foot, moderate 0. 6 to 0. 9, and heavy over 1 per square foot.

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*Todd, E. L. 1955. The distribution and nomenclature of the corn earworm. Jour. Econ. Ent. 48(5):600, 602-603.

Curly top damage to tomatoes in the canning crop area of northern Utah averaged about eight percent. Damage to early market planting in southern Utah averaged about 60 percent. Sugar beet yields in the lower portion of central Utah were reduced approximately three tons per acre this year because of populations of over one beet leafhopper per foot of beet row in early spring. A VINEGAR GNAT (*Drosophila melanogaster*) was present in large numbers on tomatoes in northern Utah in mid-to-late September. Populations wers slightly below a year ago. APHIDS were below normal in general on potatoes, celery, beans and carrots. SIX-SPOTTED LEAFHOPPER (*Macrosteles fascifrons*), a LEAFHOPPER (*Empoasca filamenta*), and POTATO PSYLLID (*Paratrioza cockerelli*) caused spotted injury, but were below normal in abundance. FLEA BEETLES caused serious damage to young corn and fall injury to small beets planted for seed crop in Washington County. MELON APHID (*Aphis gossypii*) damaged melons and cucumbers in local areas. SQUASH BUG (*Anasa tristis*) caused normal injury. CORN LEAF APHID (*Rhopalosiphum maidis*) and mites caused local damage to sweet corn in northern and central areas and to corn in Washington County. No POTATO TUBERWORM (*Gnorimoschema operculella*) found in field inspections, sorting sheds or cellars. COLORADO POTATO BEETLE (*Leptinotarsa decemlineata*) was damaging in south Kane County; few in Weber and Davis Counties. MEXICAN BEAN BEETLE (*Epilachna varivestis*) damaged beans in several counties. SPOTTED AND STRIPED CUCUMBER BEETLES caused moderate cucurbit damage. ASPARAGUS BEETLES (*Criocerus asparagi*) produced limited damage in Weber and Davis Counties. ONION THRIPS (*Thrips tabaci*) injury was common and average. CUTWORMS damaged sugar beets in Carbon County. GARDEN CENTIPEDE caused scattered damage in home gardens.

Forest, Ornamental and Shade Tree Insects

The BLACK HILLS BEETLE (*Dendroctonus ponderosae*) is still active in ponderosa pine stands of the Dixie National Forest and Bryce Canyon National Park. Control reduced populations in areas where applied but new infestations appeared. A FIR NEEDLE MINER (*Epinotia meritana*) has been increasing in severity in Bryce Canyon National Park and Dixie National Forest during the past few years. Approximately 10,000 acres are now infested and the trend is toward increasing severity. A MEALYBUG (*Puto* sp.) on 60,000 acres of Englemann spruce on the Fishlake and Dixie National Forests is active on reproduction, poles, and sawtimber. Infestations are increasing in extent and severity. DOUGLAS-FIR BEETLE (*Dendroctonus pseudotsugae*) is killing timber in many fir stands. Infestations are spotty in character but rather widely distributed. A BLOTCH LEAF MINER (*Paraleucoptera albella*) damaged thousands of cottonwood trees along the Sevier River. MOUNTAIN PINE BEETLE (D. Monticolae) has become more severe on Wasatch National Forest.

BOXELDER LEAF ROLLER (Gracilaria negundana) damage was much less extensive than in 1954. COOLEY SPRUCE GALL APHID (Chermes cooleyi) and the PINE NEEDLE SCALE (Phenacaspis pinifoliae) damaged susceptible hosts in various localities. ROUND-HEADED and FLAT-HEADED BORERS damaged ash, maple and other shade trees. LEAFHOPPER damage to elms was below average. A MITE, Tetranychus canadensis, infested mulberry and walnut and Eotetranychus weldoni infested weeping willows at Moab. LEAFHOPPERS (Erythroneura ziczac and other spp.) severely damaged Virginia creepers during late summer in many localities. ROSE LEAFHOPPER (Typhlocyba rosae) was a common pest, discoloring rose foliage. Mite damage was moderate to roses. SPIREA APHID (Aphis spiraecola) became extremely numerous. Aphids were also common on oleander in Washington County, on pyracantha in some areas, and on willows. GLADIOLUS THRIPS (Taeniothrips simplex) injured gladiolus, while the western flower thrips has been abundant in most garden and wild flower blossoms. WHITE GRUBS damaged lawns in a number of localities. EUROPEAN EARWIG (Forficula auricularia) again was a serious pest in yards, home vegetable gardens, and attacking ripe fruits about the home grounds.

Insects Affecting Man and Animals
CATTLE LICE caused above normal damage last winter in most livestock areas of Utah. CATTLE GRUBS (Hypoderma lineatum and H. bovis) caused moderate to high bot infestations, with flies running cattle in most counties. NOSE BOTS were fairly common in sheep. HORN FLY (Siphona irritans) was abundant and caused economic loss throughout Utah. STABLE FLY (Stomoxys calcitrans), HORSE FLIES and DEER FLIES were moderately annoying generally; severe in limited areas. HOUSE FLY (Musca domestica) often was abundant where livestock were kept. ROACHES, including German, brown-banded and oriental, infested many homes, some hotels, auto courts, restaurants, a hospital and stores. SUBTERRANEAN TERMITES damaged numerous homes, garages and other buildings. POULTRY MITES and LICE, and HOG LICE were fairly common, sometimes present in great abundance. EAR TICK (Otobius megnini) was less troublesome than during 1954 or 1953. TICKS, particularly Dermacentor andersoni, were numerous during spring on cattle and horses, and sometimes attacked persons on range lands. BLOW FLIES were common, and Wohlfahrtia opaca larvae sometimes attacked livestock, mink and other animals. A SNIPE FLY (Symphoromyia hirta) annoyed man in a number of canyons. SHEEP KED (Melophagus ovinus) was abundant and injurious generally in winter.

MOSQUITO populations in northern Utah were lower during the spring of 1955 than during the previous spring, because of prevailing cold weather in March and April. In Cache County, adult mosquito activity became apparent during the last week in April, when a few *Culex tarsalis* and *Anopheles freeborni* were taken while biting humans in houses and out of doors. With warmer weather in May, buildup of several *Aedes* species was accelerated and considerable annoyance to urban and rural residents resulted from attacks by *Aedes dorsalis*, *A. increpitus*, and *A. vexans.* High populations of *Culex tarsalis* became noticeable by the middle of July. In the Logan Canyon and certain other recreational areas of northern Utah, *Aedes pullatus* was pestiferous during July. High populations of *Culex tarsalis* and *Aedes dorsalis* were found in irrigated areas, where the improper management of water was responsible for production of numerous broods of mosquitoes. Annoyance from *Mansonia perturbans* was higher in 1955 than during the previous season, whereas the opposite was the case with *Culex erythrothorax.* Mosquito control in Weber County involved 18,000 acres treated by aircraft, 6,000 acres by ground sprayer, plus extensive misting; 16,597 feet of ditches dug and 3,998 feet cleaned. A total of 11,871 gallons of insecticide was used for fogging along 2,625 miles of roadway. Six light traps, operated from April 15 to October 1 at six locations, averaged 31.5 mosquitoes per night. The three operated on the western shore line, nearer Great Salt Lake, averaged 59.5 per night, while in residence areas to the east the average was 4.2 mosquitoes per night. A total of 17,900 Gambusia fish were planted to aid control.

SURVEY METHODS

Predators on Cotton

Predators were surveyed by various methods in two fields of cotton in the Arkansas-Mississippi River Delta at Varner, Arkansas, for 6 weekly counts, June 29-August 4. Blooms were available for only the last 5 and the last 3 counts. No insecticides were used during the period of observations.

Table 1. Combined totals of predators for 6 weekly counts in 2 fields. Counts made by sweeping, shaking plants over cloth stretched on board frame, examining whole plants, blooms, terminals, leaves and squares.

	Sweeping	Shaking	Examination of -					
	2400 swps.	317 plts.	317 whole plants	800 blms.	1200 tmls.	1200 lvs.	2200 sqs.	Total
Lady beetles								
adults	25	35	34	22	17	15	31	179
larvae	7	19	8	14	5	1	5	59
Banded thrips								
adults	5	51	88	10	4	47	2	207
Insidious fl.								
bug - adults	3	56	54	22	33	6	31	205
nymphs	0	19	53	13	22	6	11	124
Big-eyed bug								
adults	22	20	18	5	14	2	1	82
nymphs	4	10	7	5	2	0	2	30
Lacewing fly								
adults	10	2	11	0	3	2	2	30
larvae	2	19	18	10	1	0	4	54
eggs	0	0	132	5	3	34	15	189
Total	78	231	423	106	104	113	104	1159

Lady beetles are well distributed over plants. Banded thrips and lacewing eggs are concentrated on leaves. Big-eyed bugs are concentrated on terminals and insidious flower bugs on squares and terminals. If predators are counted while making examinations of squares, terminals and leaves for pest insects, these habits can be used. Count thrips on leaves only; big-eyed bugs on terminals only, etc.

Table 2-Comparative efficiency of different methods of counting predators

Method	Hours required*	Predators per man hour	Predators per unit
Sweeping	0. 23 for 200 sweeps	32	9 for 200 sweeps
Shaking plants over cloth-covered frame	0. 19 for 10 plants	52	7. 3 for 10 plants
Examining whole plants	0. 28 for 10 plants	63	13. 0 for 10 plants
Examining blooms	0. 35 for 100 blooms	35	13. 25 for 100 blms.
Examining terminals	0. 28 for 100 terminals	34	8. 7 for 100 tmls.
Examining leaves	0. 24 for 100 leaves	39	9. 4 for 100 leaves
Examining squares	0. 365 for 200 squares	23	9. 5 for 200 sqs.

*In sampling a field "walking time" would have to be added to this.

Sweeping, shaking plants over a cloth-covered frame, and inspection of blooms have little to recommend them. They are inefficient and qualitatively do not appear to give a true sample. Examination of whole plants was the most efficient method. To examine 30 plants required 50 minutes and yielded 52 predators. To examine 100 leaves, 100 terminals, and 200 squares required about the same amount of time and yielded only 23 predators. Qualitatively, examination of whole plants yielded relatively more lacewing eggs and fewer adults of insidious flower bug and lady beetles than did examination of terminals, leaves and squares.

Conclusions: The predator population can be adequately surveyed by taking counts while making the usual survey for boll weevil, bollworm, fleahopper, spider mites and aphids. In making special counts for predators only, examination of whole plants is more efficient. (Charles Lincoln).

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